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A listing and short descriptions of eleven steps that should be observed in the planning and building of a new school plant. This step-by-step approach was prepared with the inexperienced school board member in mind, and attempts to offer suggestions and advice for each step in the planning, bonding, and building stages. Steps covered are--(1) study of building needs, (2) financing program, (3) architect selection, (4) site seiection, (5) development of preliminary sketches, (6) approval of preliminary sketches, (7) planning of working drawings and specifications, (8) approval of working drawings and specifications, (9) call for bids and award of contracts, (10) supervision during construction, and (11) acceptance of the building. The checklist of recommended procedures for each of the aforelisted building program steps could be helpful to any school board member or school administrator contemplating a building program. (NI)

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SUGGESTED STEPS FOR PLANNING AND BUILDING A NEW SCHOOL BUILDING

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U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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Introduction

The planning of school buildings is a complex undertaking which requires the cooperation of many individuals and groups. Studies dealing with the influence of the environment on the development of the child are constantly coming to our attention. The school population encompasses all of the children of all of the people as well as many adults, requiring a diversified school program and a variety of school facilities. With new materials, structural designs, and service systems, an intelligent use of them requires a high degree of technical ability. With these points in mind it is safe to say that school administrators, teachers, school boards, pupils, custodians, architects, educational consultants, and community groups all have significant contributions to make in planning the new building.

Effective architectural planning of buildings to house a complex educational program must be preceded by equally effective educational planning. No architect should attempt to plan a school building, or any part of it, until he knows the nature of the various uses to be made of it.. Architects cannot be expected to be specialists in the field of educational planning. Their major responsibilities are to design a building to perform specific functions, prepare drawings and specifications, and to supervise the construction. They must translate the educational specifications presented to them by the administrator, school board, and school planning specialist into a functional school building. Likewise, the administrators should not attempt to take over the functions of the architect.

The school board has the responsibility of providing an adequate educational plant which will, in a great way, aid or hinder the course of education in the community for the next twenty-five or thirty years. The building needs of the community should not be made piecemeal. A careful study or survey of the community, its present needs as well as its future needs, should be made. This study obviously shows the need for a long-range program which should be developed into a master plan,

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which will in turn aid in wise and economical use of public money. Schools cost money and a school board cannot afford to demand anything less than full value for money expended.

Consultants of the School Facilities Section of the State Department of Education are available at no cost to your school district to assist in planning your school building needs. They are available to meet with your school board, administrator, citizens or faculty committee to assist in developing the educational blueprint which should be turned over to your architect.

Many school board members are inexperienced in the steps in school building construction. It is with this thought in mind that this step by step outline was prepared. It attempts in a few short paragraphs under each step in the planning, bonding and building stages to offer suggestions and advice to the school board members. More detailed information is always available from the State Department of Education.

In the outline, numbers enclosed in parenthesis indicate the section in the Oregon School Law which is being explained or quoted.

Step 1 - Make a study of your school building needs

A. The successful and satisfactory school building program depends upon thorough planning.

B. Who is available to plan the school building needs?

1. The local administrator with or without local committees.
2. The architect.
3. A school survey specialist.
4. Members of the School Facilities Section staff of the State Department of Education are available to assist the local authorities.
5. A committee composed of members of the local school board, staff, administration, architect, community leaders, and school building consultants.

C. The school survey study should answer the following questions:

1. What will be the educational policy for our community?
2. What kind of a teaching program will best serve the community?
3. What changes will be needed in the curriculum?
4. How many children will be served?
5. To what extent can present facilities be utilized?
6. What additional facilities will be needed?
7. Where will the new schools be located?
8. How much money is needed?

D. Special considerations in planning.

1. Do not rush through your plans. Take time to do a good job.
2. Start early enough to allow for the gathering of best possible information on needs.
3. Planning should be a continuous process.
4. Allow the architect plenty of time to prepare plans.
5. Allow plenty of time for construction.

E. Sample survey outlines are available from the School Facilities Section of the State Department of Education.

Step 2 - Plan your financing program

A. Methods of financing.

1. Current budget.
   a. Pay-as-you-go. This plan is possible where the cost of a building, remodeling or alteration can be placed within the current budget.
   b. Establish a building fund. This is a plan for long-range future building.
2. Bonding. Complete information for setting up a bonding program is available in the publication, "Manual for Issuance of Bonds of School Districts of the State of Oregon", prepared in the office of the State Treasurer. This manual is available on request from the State Department of Education.
3. Legal service will be required for some phases of a project and may be desired on others.
4. Selection of an attorney.
   a. Competent attorneys accustomed to handling bond issues will prepare all required resolutions, ballots, advertising and other documents to assure the legality of each step in the program.
   b. The standing of attorneys with bond buyers will assure the school district that prospective bidders will accept the information provided and enter the best bid possible.

Step 3 - Select your architect

A. Legal requirements.

1. Oregon Law. Oregon Law (ORS 671.030) makes it unlawful for a person to make plans, specifications, supervise the erection, enlargement or alteration of buildings, or any appurtenance thereto for any building project involving over 4,000 square feet of ground area and over 20 feet in height from the top of the foundation to the top of the rafter plate unless he is a registered architect or engineer.
2. An Attorney General's Opinion. An Attorney General's Opinion dated December 1, 1937, provides "It is unlawful for a person who is not registered to practice the profession of architecture to design and supervise the construction of an addition to a school building, when such building and addition will have a ground area of more than 4,000 square feet."

B. Selecting the architect

1. The State Department of Education does not recommend architects, but a list of registered architects is available for you upon request.
2. Items to consider in selecting the architect.
   a. Has the architect a long record of successful architectural work?
   b. Does he maintain a good organization?
   c. Has he had ample experience in planning schools?
   d. Is he familiar with present day educational needs and practices?

e. Does he work harmoniously with his clients, educational advisors, and contractors?
f. Have you visited some of the schools designed by him?
g. Have you discussed his work with his former clients?
h. Is he free from set or preconceived ideas which are hard to change?
i. Is he willing to follow your ideas on educational needs?
j. Does he give adequate supervision to his buildings?
k. Is he a man of unquestionable character and professional integrity?
l. Are his buildings attractive without undue ornamentation?
m. Does he make economical use of space and materials in line with educational needs?
n. Does he have adequate engineering services available?
o. Will he be available for frequent conferences to plan and design a school building?
p. Is his organization sufficiently competent so that it can give adequate study to your building project?

C. The architect's contract

1. Immediately upon selection of the architect a written contract should be drawn. Oral agreements often lead to confusion and dissension.
2. Contract forms prepared by the American Institute of Architects are available or your attorney may draw up a form.
3. The contract should be definite in regard to rate and time of payments to the architect.
4. The contract should be specific as to the services to be performed by the architect.
   a. Included in the services to be performed are the preparation of preliminary drawings, working drawings, specifications and large scale detail drawings, the drafting of forms and proposals, the taking of bids and the preparation of contracts, the issuance of certificates of payment, issuance of addenda and change orders, and the general administration and supervision of the work.

D. Legal services

1. The legal services of the architect
   a. The architect may prepare advertisements for construction bids, advise the board regarding bids and bidders, and draw up contracts for construction. Standard forms will probably be used.
   b. The board should have its attorney examine and approve these advertisements and contracts if drawn by the architect.

Step 4 - Secure approval of your site

A. Approval of the site for a standard school is required by the following:

1. State Department of Education for the educational adequacy of the site.
2. State Board of Health for sewage disposal, water supply, and other sanitary factors.

B. Recommended site size

1. Elementary - 5 usable acres plus an additional acre for each 100 pupils of anticipated ultimate maximum enrollment.
2. Secondary - 10 usable acres plus an additional acre for each 100 pupils of anticipated ultimate maximum enrollment.
3. Neighborhood schools - these should be considered separately.

C. Characteristics of a good site

1. Readily accessible.
2. Well drained.
3. Removed as far as possible from excessive traffic hazards, noises and insanitary conditions.
4. An ample supply of safe and potable water.
5. Soil of suitable type for construction purposes.

D. Before you purchase the site

1. Secure site approval of the State Department of Education and the State Board of Health.
2. If a well is needed, test for ample water supply.

E. Secure necessary forms for approval of the site from the School Facilities Section of the State Department of Education. (See Elementary and Secondary Standards for other information regarding sites.)

Step 5 - Develop your preliminary plans

A. Plan the building to house your educational program.

1. Preliminary meetings of professional staff, school board members, school building consultants, community leaders, and the architect.
2. Draw up the educational needs, including:
   a. Number and use of each classroom.
   b. Affinity or relative location of classrooms and other facilities.
   c. Approximate size of facilities.
   d. List of all other features you wish incorporated in the plans.

B. The responsibility of the architect for preliminary plans.

1. His plans should reflect the educational plant you want.
2. If you do not like the first preliminary sketches of the architect, have him rework them until you get what you want. Never accept the preliminary sketches until they satisfy you and are approved by the State Department of Education.
3. Develop a set of tentative outline specifications with your architect.

C. Assistance from the State Department of Education

1. School building consultants and other personnel in the State Department of Education are available to meet with your school board and the architect to aid in drawing up the preliminary plans and specifications.

Step 6 - Review of your preliminary sketches

A. Responsibility for having preliminary sketches reviewed.

1. The school board should advise the architect to have preliminary sketches approved by the State Department of Education before the working drawings are started.
2. This responsibility for plan approval should be a part of the contract between the school board and the architect.

B. Nature of preliminary sketches to be submitted for preliminary approval.

1. Plot plan drawn to scale.
2. Floor plan drawn to scale.
3. Elevations of at least one side of the building.
4. Sections where necessary to explain sketches.
5. Tentative outline of specifications.

Step 7 - Plan your working drawings and specifications

A. Importance of working drawings and specifications.

1. Working drawings should not be approved by the school board until they have carefully studied the drawings and specifications.
2. Change orders resulting from changes in working drawings are costly if made after the contract has been let.

B. Final working drawings should include:

1. Site or plot plan.
2. Floor plans.
3. Elevations.
4. Sections.
5. Details.
6. Plumbing.
7. Heating and ventilation.
8. Electrical.
9. Structural plans.
10. Complete specifications.

Step 8 - Approval of working drawings and specifications by the local school authorities and the state agencies

A. Approval by the school board.

1. Approve after all specifications previously agreed upon by the school board have been met.
2. Adopt the plans by a motion.

B. Approval by other state agencies.

1. Approval by the State Department of Education.
   a. Elementary and Secondary Standards require "all architectural plans

for all new construction, whether it is a new building, addition to old buildings, or remodeling, shall be presented to the State Superintendent of Public Instruction before calls for bids on the construction are authorized." The responsibility for compliance with these provisions rests with the local school board.

2. Approval by the State Board of Health.
3. Approval by the State Fire Marshal.
4. Approval by the Commissioner of Labor.

Step 9 - Call for bids and award the contract for the construction

A. Legal requirements.

1. Oregon Law (ORS 332.285) specifies that (a) in any district with 1,000 or more children, according to the latest school census, when in the board's opinion the cost of any lot of furniture, stationery, apparatus, fuel, building, or improvement or repairs to buildings will be at least $2,000, ... (b) in any district having less than 1,000 children, according to the latest school census, when in the board's opinion the cost ... amounts to at least $1,000, shall advertise for bids.
2. (ORS 332.305) After opening bids, the board shall award the contract or purchase to the lowest responsible bidder, taking into consideration quality, probability of performance, and in the case of lease and rental agreements, condition and location of the premises.
3. The act also provides for public opening of bids at a time not less than 15 days after the initial advertisement for the bids.

B. Requirements relating to public works, contracts, bonds, etc., as covered in Oregon Law, ORS 279.008 to 279.544.

1. Bidder's Prequalification Questionnaire.
   a. Required to be submitted 10 days before the opening of bids and before a bidder is given a set of working drawings and specifications if the total estimate of the project is to be $10,000 or over.
   b. No bid shall be received from any person who has not submitted the sworn statement as required above.
2. Bid bonds.
   a. (ORS 279.030) Each bidder shall furnish and file security with his bid in the form of a certified check or a surety bond.
   b. It shall not exceed 10 percent of the amount bid in the contract.
3. Performance bond.
   a. To be given by the successful bidder.
   b. This bond usually is 100 percent of the contract.
4. Payment bond.
   a. Sometimes combined with performance bond.
   b. ORS 279.510 provides that the contractor is to give a bond which is surety that all liens or claims against the site for labor or materials will be paid by the contractor.
5. Awarding the contract is an important step.
   a. Work closely with your architect and legal advisor.
   b. Study carefully the "lowest responsible bidder" provision as given in the Attorney General's Opinion of February 19, 1952.

Step 10 - Supervision during construction

A. In the contract with your architect agree on the extent and nature of supervision you will expect.

B. On large projects a clerk-of-the-works, who is on the job daily, will give a watchful eye to all construction.

C. Working drawings and specifications should be followed to the letter by all parties unless the school board authorizes a "change order." These should always be in writing and signed by proper authorities.

Step 11 - Accept the building

A. Final acceptance.

1. Prior to the issuance of the certificate of final approval by the architect:
   a. The board of education should make an overall inspection of the building accompanied by the architect.
   b. See that all provisions of the drawings, specifications, addenda and change orders have been met.
   c. Accept the building only after you are satisfied with the entire construction job.

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